

422 Rec'd PCT/PTO 07 APR 2000

1
TITLE.IMPROVEMENTS IN AND RELATING TO ROOFING OR SHEATHING.

TECHNICAL FIELD OF THE INVENTION.

This invention relates to an exterior sheathing element and a method of applying exterior sheathing to a structure. More particularly the invention relates to a sheet metal sheathing element useful for roofing.

BACKGROUND ART OF THE INVENTION.

A variety of exterior sheathing elements including those formed from sheet metal are known. Traditionally with exterior sheathing, particularly roofing, the word "tile" is used to indicate a single tile such as a concrete tile. With the development of sheet metal sheathing it has become well established to manufacture elements that visually replicate the designs of such traditional tiles. Because these sheet metal tiles are substantially lighter than their concrete counterparts they are normally manufactured as multiple units, that is, as to replicate say three or four traditional tiles. This capability is one of the advantages these tile have over the traditional "single" tile. This invention is primarily concerned with a multiple sheet metal tile and herein the term "tile" is used accordingly. However, the nature of the invention does lend itself for manufacture and use as a single tile element and the term is to be considered as being applicable to either form of tile.

A first object of this invention is to provide a sheet metal sheathing element particularly useful as a roofing tile that can be manufactured utilising thinner sheet metal than typically used with sheet metal tiles. A second object is to provide a sheet metal tile that replicates a traditional wooden shingle "tile" particularly in a multiple configuration thereof as discussed above relative to concrete tiles. A further object of this invention is to provide such a sheathing element adapted for individual fixing to a supporting structure and subsequent conjoining and fixing of further tiles both laterally and longitudinally of the first tile. The steps can be repeated to cover a desired area of a supporting structure and thus a further object is to provide a method of affixing sheathing tile to a structure. Yet a further object is to provide the public with a further choice in sheathing elements in particular a sheathing element suitable for mounting by relatively unskilled people.

DISCLOSURE OF THE INVENTION

According to a first aspect of this invention there is provided an exterior sheathing element having a first edge portion forming a channel on what, in situ, will be an innerface of the element, and having a second and opposite edge portion forming a channel on what, in situ, will be an outerface of the element, with a part of that second edge portion, being a part set-back from at least one side of the tile, having a mounting tab projecting clear of the second edge portion in a substantially co-planar relationship to a main body of the element, the structure enabling a mounting tab free part at one side of a first sheathing element to be overlapped with a side of a second element with their corresponding folded edge portions engaged, and a first folded edge portion of a third sheathing element to be engaged over and about the second folded edge portion of at least one of the first and second sheathing elements.

According to a second aspect of this invention there is provided a sheet metal exterior sheathing element configured to replicate at least one wooden shingle and comprising a substantially planar body save for strengthening indentations including, adjacent one side, a series of longitudinally extending ribs, the ribs being on that side of a tile intended, in use, to be disposed on the underside when overlapped with a side of a second element to also act as weathering indentations, and having a first edge portion turned back on itself to form a channel on what, in situ, will be an innerface of the element, and having a second and opposite edge portion also turned back on itself to form a channel on what, in situ, will be an outerface of the element with a part of that second edge portion set-back from at least one side thereof having a return fold to extend back on itself and project clear of and substantially co-planar to the body of the element to form a mounting tab, the structure enabling a first and second sheathing element disposed with their sides overlapping and their corresponding folded edge portions engaged, the first folded edge of the lowermost tile being located within the channel of the first folded edge of the uppermost element and the mounting tab free part of the second folded edge of the uppermost element being located within the channel of the lowermost element and a first folded edge portion of a third tile to be engaged over and about the second folded edge portion of at least one of the first and second tiles.

According to a third aspect of this invention there is provided an exterior sheathing element having a substantially planar body and having a first edge portion folded over to overlay, in

adjacent spaced relationship to thereby form a first transversely disposed channel, what in situ will be a lower section of an innerface of the element, and having a second edge portion opposite the first edge portion, folded over to overlay, in adjacent spaced relationship to thereby form a second transversely disposed channel, what in situ will be an upper section of an 5 outerface of the element, at least a part of the second edge portion being further folded back on and over itself to form a mounting tab projecting clear of the second edge portion in a substantially co-planar relationship to the plane of the body of the element, the structure of the element enabling a first side portion of a first sheathing element to be overlapped with a second and opposite side portion of a second element without engagement except for the overlapping 10 sections of the first and second folded edge portions, engagement of those sections being by the side section of the first folded edge portion of the underlay element being located in the groove formed by the corresponding section of the overlay element, and the side section of the second folded section of the overlay element being located in the groove formed by the corresponding section of the underlay element, and a first folded edge portion of a third sheathing element to 15 be engaged over the overlapping sections and adjacent sections of the second folded edge portions of the first and second sheathing elements with those second folded edge sections being located in the groove formed by the first folded edge portion of the third element.

According to a fourth aspect of this invention there is provided a method of exterior sheathing a structure with a plurality of sheathing elements as described in any one of the three 20 immediately preceding paragraphs comprising substantially of repeating the steps of positioning a first sheathing element on a sheathing element support of the structure, positioning a second sheathing element with a side section thereof in an overlapping relationship with a section side of the first element and in so doing ensuring their corresponding folded edge portions engage one within the other by the side section of the first folded edge portion of the underlay element 25 being located in the groove formed by the corresponding section of the overlay element, and the side section of the second folded section of the overlay element being located in the groove formed by the corresponding section of the underlay element, and positioning a first folded edge portion of a third sheathing element in engagement over the overlapping sections and adjacent sections of the second folded edge portions of the first and second sheathing elements 30 with those second folded edge sections being located in the groove formed by the first folded

edge portion of the third element, and throughout utilising mounting means with the mounting tabs to affix the sheathing elements to the support.

BRIEF DESCRIPTION OF DRAWINGS.

5 Fig. 1 is an upperface or obverse view of two sheathing elements being presented to one another in readiness for being laterally overlapped and engaged with one another as depicted in Figure 2, and

Fig. 3 depicts a third sheathing element adjacent the two laterally overlapped elements depicted in Figure 2, the third element being presented to be joined to the first two elements in a position depicted schematically by broken-line 3, and

10 Fig. 4 is a partly schematic side view essentially in the direction of arrow A on Figure 3 and with the elements engaged with one another and mounted in situ onto a support extending adjacently therebeneath for substantially the complete span of the sheathing and

15 Fig. 5 is a similar view to Figure 4 depicting a variation of the sheathing element mounted to support rafters disposed in a spaced apart manner beneath the sheathing.

BEST MODE OF CARRYING OUT OF THE INVENTION.

A sheathing element 1 is preferably manufactured from sheet metal in known manner such as by pressing, roll forming and/or folding. Preferably element 1 is designed as a multiple tile as discussed above and in particular to replicate a plurality of wooden shingles arranged in a side overlapping side relationship as in situ. While the tile of this invention can be manufacture from sheet metal as typically used for sheet metal sheathing tiles; the design lends itself suitable for manufacture using thinner sheet metal. This in turn enables the tile to economically replicate wooden shingles. Preferably sheet metal in the region of 0.27mm gauge is used, in situ, this necessitating a support extending completely therebeneath. Typically such a support is, as depicted in Figure 4, plywood or similar sheets 2 being mounted on rafters 16 or similar elements to completely cover an area. Because of their lightweight, their design and their

preferred utilisation with such a support the tile of this invention is suitable for mounting by relatively unskilled people.

Preferably sheathing element 1 is pressed into a thin or substantially single plane configuration having an overall thickness, including inter-engaging channels 7 and 9 as described below,

5 similar to that of a typical wooden shingle. Indentations indicated by various longitudinally extending lines on the drawings are preferably provided to strengthen the tile 1 and provide the desired visual wooden shingle replication. These indentations are not pronounced and in the preferred form the tile 1 has the exterior face thereof coated, in known manner, with stone chips or similar (not shown for the sake of clarity) to enhance this replication.

10 The indentations include weather ingress inhibiting ribs 5, preferably longitudinally extending in a corrugated manner and preferably being more pronounced than most of the remainder of the indentations. The ribs 5 are disposed along at least one side zone 4 of the tile 1, being that side that in use is disposed on the underside when overlapped (as depicted by Figs. 1 and 2), with another tile 1. In the drawings both sides of a tile 1 are shown with ribs 4 but they are not
15 necessary on that side of a tile 1 that will be uppermost in situ.

A first edge portion 6 is formed back on itself such as by folding to form a channel 7 on what, in situ, will be an innerface of the tile 1. On a second and longitudinally opposite edge portion 8 a further channel 9 is formed on what, in situ, will be an outerface of the tile 1. (While the tile 1 is preferably wider than it is long the terms "side" and "longitudinal" are used in the manner
20 chosen to assist clarity.) Channel 9 is also preferably formed by folding and a mounting tab 10 is also formed projecting from that outer edge portion 8.

Mounting tab 10 extends along the edge portion 8 but preferably terminates short of one side of the tile 1 to leave a mounting tab free section 11. The tab free section 11 is preferably disposed at the side of the tile opposite the ribs 5 or in other words that side of a tile 1 that will be
25 uppermost when in a side overlapping relationship with another tile. It will be understood by those skilled in the art and the following description that mounting tab 10 may also terminate short of the other side of the element and need not be continuous.

Mounting tab 10 is preferably formed by providing a return fold on the mounting tab forming part of edge 8, the mounting tab 10 extending back about channel 9 and then outwardly substantially co-planar with the body of the tile 1. The side of edge portion 8 distal of mounting tab free part 11 and the associated engaging section of edge portion 6 may be 5 stepped, as indicated at 17 on tile 1a in Figure 1, to assist the side overlap engagement, and continuity of line, of one tile with another. For similar reasons, at the area 17, channel 9 may be marginally "opened" and at the tab free part 11 marginally "closed".

The construction and arrangement of the tile 1 enables a plurality of tiles 1 to be laterally overlapped with one another as depicted in Fig. 2. Referring in particular to Fig. 1, the overlap 10 is undertaken by presenting a first tile 1a to a second tile 1b. This is indicated by double headed arrow 13, the overlap providing their corresponding edge portions 7 and 8 are engaged within one another. More particularly, the edge portion 6 of tile 1b locates within channel 7 of tile 1a and the tab free section 11 of edge portion 8 of tile 1a locates in channel 9 of tile 1b.

Referring in particular to Fig. 3 a third tile 1c can then be presented; as indicated by the double 15 headed arrow 15, to tiles 1a and/or 1b. Preferably the presentation is as to engage the folded edge 7 of tile 1c over and about the overlapping folded edges 8 of the tiles 1a and 1b and as to extent to either side of that overlap. This relationship of three such tiles 1 enhances the weathering capabilities of the junction between the tiles 1. For clarity, this engagement is depicted in side view schematically in Figs. 4 and 5, the engagement being in the nature of a 20 close nesting or clipping together.

A preferred method of in situ mounting is to connect tiles 1 in the sequence described above. In so doing the tiles are rested on backing support sheet 2 and fixed thereto such as by stapling 12 through the mounting tabs 10 into the sheet 2. These steps are substantially repeated to cover the whole of a required area. In so doing the mounting tabs 10 are hidden from view and a 25 continuous sheathing finish achieved.

Referring in particular to Fig. 5 a variation of the sheathing element 1 is depicted. This sheathing element 1d is preferably manufactured from thicker sheet metal in the region of 0.5mm gauge sheet metal. Mounting tab 10 incorporates a laterally extending channel 17 that can be used as a batten to affix the sheathing elements 1d directly to spaced apart rafters 16.